Network Design and Analysis Center

Purpose: The Network Design and Analysis Center (NDAC) is a secure computing laboratory for the design, modeling, and analysis of telecommunications networks. The NDAC enables the Office of the Manager, National Communications System (OMNCS), to maintain a thorough understanding of the operation and vulnerabilities of the Public Network (PN) and to predict how it will perform under conditions of stress. NDAC capabilities include network performance assessment tools, telecommunications modeling and simulation tools, and telecommunications geographic information systems.

Background: Virtually all Government and national security and emergency preparedness (NS/EP) telecommunications rely on the PN. Because the NS/EP community depends on telecommunications to accomplish its daily and critical missions, a firm understanding of the PN is necessary to protect critical assets and functions of the United States. Since the divestiture of AT&T in 1984, the OMNCS, through the NDAC, has been modeling and analyzing the PN to assist in ensuring that the Nation's NS/EP telecommunications requirements are met in various scenarios and time frames. The OMNCS continues to refine this analysis capability through updated assessment tools in the NDAC and strong OMNCS relationships with commercial telecommunications providers.

Highlights:

- ❒ Supports the OMNCS and National Communications System (NCS) member organizations in addressing specific telecommunications analysis requirements.
- ❒ Maintains current and valid representation of the PN.
- ❒ Enables the OMNCS to model and simulate U.S. telecommunications networks under a variety of normal operating and stressed conditions.
- ❒ Allows analysts to predict how the PN would respond to events that might have damaging effects on the operational networks.
- ❒ Provides a network perspective on emerging technologies.
- ❒ Permits examination of the effect of changes and new technologies on the overall PN, specifically how these changes affect NS/EP requirements.
- ❒ Incorporates changes in network architectures and routing schemes, introduction of new carriers and networks, and impacts of new technologies.

NDAC Capabilities

Network Performance Assessment Tools

- *TAMI:* Analyzes traffic congestion in the Public Network
- *QTCM:* Designs and analyzes circuit-switched networks
- *IDACAM:* Evaluates connectivity of long-haul transport networks
- *PN Models:* Evaluates connectivity of local telephone networks

Telecommunications Modeling and Simulation Tools

- *OPNET:* Models large communications networks with detailed protocol modeling and performance analysis
- *COMNET III:* Predicts end-to-end performance of voice and data networks
- *NETMAKER:* Designs and analyzes private and hybrid data networks (local area networks and wide area networks)

Telecommunications Geographic Information Systems

- *LECMap:* Allows graphical analysis of local exchange network infrastructure, including switch locations and network topology
- *Cellular Coverage Tool:* Utilizes demographic data and the FCC's cellular antenna database to display existing cellular network topologies and to aid design of new networks
- *MapInfo Professional* and *ArcView:* Allow graphical analysis of data layers via queries, restrictions, and selections

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